CLAIMS

1. Functionalized prepolymer (macromer) obtainable by reaction of a prepolymer comprising at least one alcohol, amine, and/or sulfhydril group, with an unsaturated mono-esterified dicarbonic acid.

2. Functionalized prepolymer (macromer) according to claim 1, wherein the prepolymer is end-capped with the unsaturated mono-esterified dicarbonic acid

3. Functionalized prepolymer (macromer) according to claim 1 or claim 2, wherein the unsaturated mono-esterified dicarbonic acid is mono-esterified fumaric acid.

4. Functionalized prepolymer (macromer) according to any of the claims 1-3, wherein the unsaturated mono-esterified dicarbonic acid is esterified with a C_1-C_5 alkyl alcohol, preferably an ethyl alcohol.

5. Functionalized prepolymer (macromer) according to any of the claims 1-4, wherein the unsaturated mono-esterified dicarbonic acid is fumaric acid monoethyl ester.

6. Functionalized prepolymer (macromer) according to any of the claims 1-5, wherein the prepolymer is chosen from the group consisting of poly(ethylene glycol) (PEG), poly(trimethylene carbonate) (polyTMC), poly(D,L-lactide) (PDLLA), poly(L-lactide) (PLLA), poly(D-lactide) (PDLA), poly(Є-caprolactone) (PCL), poly(dioxanone), and combinations thereof.

7. Polymer network obtainable by radical polymerization of a functionalized prepolymer (macromer) according to any of the claims 1-6.

8. Polymer network according to claim 7, wherein the radical polymerization is ultra-violet (UV) radical polymerization, redox radical polymerization, and/or heat radical polymerization.

9. Method for providing a functionalized prepolymer (macromer), comprising reacting of a prepolymer comprising at least one alcohol, amine, and/or sulfhydril group with an unsaturated mono-esterified dicarbonic acid

10. Method according to claim 9, wherein the alcohol, amine, and/or sulfhydril group is present at the terminus of the prepolymer.

11. Method according to claim 9 or claim 10, wherein the unsaturated mono-esterified dicarbonic acid is mono-esterified fumaric acid.

12. Method according to any of the claims 9-11, wherein the unsaturated mono-esterified dicarbonic acid is esterified with a C_1-C_5 alkyl alcohol, preferably an ethyl alcohol.

13. Method according to any of the claims 9-12, wherein the unsaturated mono-esterified dicarbonic acid is fumaric acid monoethyl ester.

14. Method according to any of the claims 9-13, wherein the prepolymer is chosen from the group consisting of poly(ethylene glycol) (PEG), poly(trimethylene carbonate) (polyTMC), poly(D,L-lactide) (PDLLA), poly(L-lactide) (PLLA), poly(D-lactide) (PDLA), poly(ϵ-caprolactone) (PCL), poly(dioxanone) and combinations thereof.

15. Method for providing a polymer network comprising radical polymerization of a functionalized prepolymer (macromer) as defined in any of the claims 1-6.

16. Method according to claim 15, wherein radical polymerization is ultra-violet (UV) radical polymerization, redox radical polymerization, and/or heat radical polymerization.

17. Method according to claim 15 or claim 16 comprising:

- dissolution of the functionalized prepolymer (macromer) in a suitable solvent or providing a melt of the functionalized prepolymer (macromer);
- ultra-violet (UV) radiation, redox, and/or heat treatment of the functionalized prepolymer (macromer).

18. Use of a polymer network as defined in claim 7 or claim 8 as a medicament.

19. Use of a functionalized prepolymer (macromer) as defined in any of the claims 1-6 as a medicament.